HAMPTON VA

Back River Bacteria TMDL Action Plan

DRAFT REPORT

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Back River Bacteria TMDL Action Plan

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Acronyms

BMP	Best Management Practice
CCTV	Closed-Circuit Television
CFU	Colony-Forming Unit
DCR	Department of Conservation and Recreation
E. coli	Escherichia Coli
EPA	US Environmental Protection Agency
GIS	Geographic Informational System
HCCC	Hampton Clean City Commission
HOA	Home Owners Association
HRPDC	Hampton Roads Planning District Commission
HRSD	Hampton Roads Sanitation District
HWRP	Hampton Waterways Restoration Project Committee
IDDE	Illicit Discharge Detection and Elimination
IP	Implementation Plan
LA	Load Allocation
LF	Linear Feet
ml	Milliliter
MOS	Margin of Safety
MPN	Most Probable Number
MS4	Municipal Separate Stormwater Sewer System
POC	Pollutant of Concern
RWWMP	Regional Wet Weather Management Plan
SSES	Sanitary Sewer Evaluation Survey
SSO	Sanitary Sewer Overflow
SWPPP	Stormwater Pollution Prevention Plan
TNCC	Thomas Nelson Community College
TMDL	Total Maximum Daily Load
USCB	US Census Bureau
USDA	US Department of Agriculture
USGS	US Geological Survey
USFWS	US Fish and Wildlife Services
VADGIF	Virginia Department of Game and Inland Fisheries
VDEQ	Virginia Department of Environmental Quality
VDH-DSS	Virginia Department of Health – Division of Shellfish Sanitation
VDOT	Virginia Department of Transportation
VCE	Virginia Cooperative Extension
VIMS	Virginia Institute of Marine Science
VMRC	Virginia Marine Resources Commission
VSMP	Virginia Stormwater Management Program
VPDES	Virginia Pollutant Discharge Elimination System
WLA	Waste Load Allocation

1.0 Introduction

1.1 Purpose

The City of Hampton (City or Hampton) is designated as a Phase 1 Municipal Separate Storm Sewer System (MS4) (population over 100,000 persons) and is authorized to discharge stormwater from municipal-owned or operated storm sewer outfalls under its Individual Permit No. VA0088633. This permit requires the City to address pollutants of concern (POC) in accordance with state requirements where it has been allocated a waste load in an approved Total Maximum Daily Load (TMDL). Based on the water quality assessment presented in the February 11, 2014 draft of the *"Total Maximum Daily Loads of Bacteria for Back River in York County and Cities of Hampton, Poquoson, and Newport News, Virginia"*, hereby referred to as the Back River TMDL, prepared by the Virginia Institute of Marine Science (VIMS) for the Virginia Department of Environmental Quality (VDEQ); the Back River *"does not support its designated use of primary contact recreation (e.g., swimming and fishing) and providing shellfish growing areas"* (VIMS, 2014). In accordance with Section 303d of the Clean Water Act and the US Environmental Protection Agency's (EPA) Water Quality Planning and Management regulations (40 CFR Part 130), VDEQ has developed TMDLs for bacteria in the Back River and the City has been allocated a waste load allocation (WLA).

Sections I.A.6 and I.D.2 of Hampton's MS4 Permit requires the City, as the system operator, to maintain an updated MS4 program plan that includes a specific TMDL Action Plan for pollutants allocated to the MS4. Section I.D.2 outlines the procedures and required content of the plan. This document addresses that requirement and serves as the City's MS4 specific TMDL Action Plan to identify the best management practices (BMP) and other activities to be implemented to address the bacteria waste load allocation assigned to the City's applicable regulated MS4 area.

1.2 Regulated Areas

Regulated areas are lands that produce non-point source runoff that drain through the City's stormwater system and discharge through pipes and/or ditches to the natural waterways within and adjoining the City. These are the lands that are covered by the City's MS4 Permit and to which a waste load allocation has been assigned. Once in the City's stormwater system, those waters and associated pollutants become regulated, and must meet Virginia discharge standards. Direct discharges from land to the surrounding waters that do not pass through the City's stormwater system are not regulated. However, most policies and pollutant reduction practices recommended in the Action Plan will apply city-wide and address discharges from both regulated and non-regulated lands.

The City has delineated its MS4 regulated area as of June 20, 2016 during the development of its Chesapeake Bay TMDL Action Plan, which is still currently in development. The regulated area was delineated following the guidance set forth in the *"Chesapeake Bay TMDL Special Condition Guidance – GM15-2005"* (dated May 18, 2015). Those regulated areas have not changed since that delineation and were used in the development of this TMDL Action Plan.

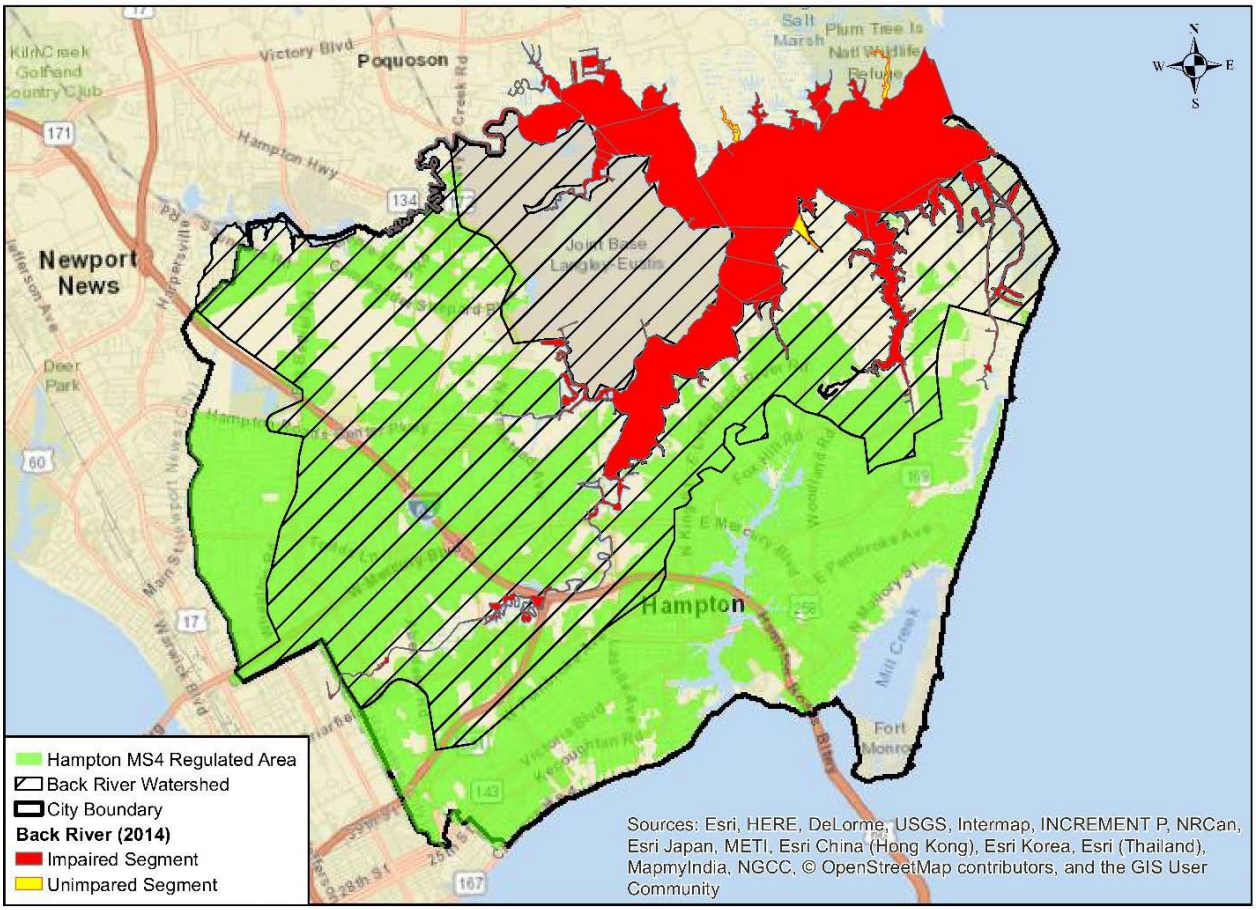
The City's geographic informational system (GIS) data was used in the delineation of the MS4 regulated areas and allowable exclusions. Table 1 below includes a summary of total, regulated and excluded areas within the City.

Table 1 - MS4 Regulated Areas and Excluded Areas Summary

Category	Description	Total Acreage
Total	**City of Hampton Total Area (MS4 Regulated Area + Exclusions)**	**38,305.57**
Regulated	**MS4 Regulated Area**	**19,917.77**
Excluded	**Total Excluded Area**	**18,387.80**
Water	Excluded Open Water	5,273.76
Forest	Excluded Forest and/or Wetland	1,859.09
Direct	Excluded Direct Drainage to Open Water	5,614.58
Federal	Federal Exclusions	4,246.63
	US Army Corps of Engineers Big Bethel Reservoir	132.37
	Hampton National Cemetery	14.96
	US Dep of Veteran Affairs Hampton Med Center (Phase II - VAR040080)	100.41
	Fort Monroe - Federal Lands	359.38
	US NASA - Langley Research Center (VAG750198 & Phase II VAR040092)	743.14
	Highway Motors of Hampton Virginia Incorporated (VAR050240)	8.29
	Joint Base Langley-Eustis (VAR052285 & Phase II - VA0083194)	2,888.08
State	State Exclusions	12.62
	Agricultural Research Center	0.67
	Dandy Point Marina (Parking Area)	2.99
	VDOT Wetland Mitigation Area - W Mercury Blvd near Air Power Park	8.96
VPDES	Excluded VPDES	573.51
	Branscome Inc. - Hampton - Pembroke Ave (VAG110031 & VAR050368)	36.33
	Vulcan Construction Materials LLC - Hampton (VAG110151)	3.25
	Rappahannock Concrete - Hampton Plant (VAG110326)	4.79
	Quinn Kenneth L Residence (VAG403005)	0.86
	Owen Sasha J and Denise L Residence (VAG403006)	1.17
	L D Amory and Company Incorporated (VAG523001)	1.22
	Graham and Rollins Incorporated (VAG523005)	0.55
	Wanchese Fish Company Incorporated (VAG523006)	4.07
	Enterprise Rent A Car - 906 W Mercury Blvd (VAG750138)	0.55
	T and S Used Auto Parts (VAR050239)	4.20
	TS Quality Auto Parts (VAR050247)	3.29
	US Postal Service - Vehicle Maintenance Facility - Hampton (VAR050300)	5.66
	Old Dominion Metals and Recycling (VAR050316)	6.36
	USA Waste of Virginia Landfills - Bethel (VAR050384)	405.64
	Riggins Company LC (VAR050472)	3.46
	Craft Machine Works Incorporated - 48th Street (VAR050474)	6.79
	Howmet Casting and Services Incorporated (VAR050475)	37.00
	Public Scrap Incorporated (VAR051235)	4.76
	Catalina Cylinders (VAR051638)	22.19
	VA Motors LLC (VAR051717)	1.37
	Hampton Roads Transit - Victoria Blvd (VAR051900)	8.89
	Advex Corporation (VAR052277)	11.13
Other MS4's	Other Excluded MS4 Permittees (not excluded as State or Federal lands)	807.61
	Fort Monroe Authority(Phase II - VAR040130)	157.77
	Thomas Nelson Community College (Phase II - VAR040087)	58.24
	Virginia Department of Transportation (Phase II - VAR040115)	591.60

Of the approximate 38,305 acres (59.9 square miles) which fall within the City boundary, approximately 19,920 acres (31.1 square miles) were delineated as MS4 regulated area. GIS shapefiles of the Back River watershed and the City's MS4 regulated area were used to delineate the estimated MS4 regulated area discharging to the Back River, which is approximately 13,710 acres (21.4 square miles), depicted in Figure 1 below.

Figure 1 - City MS4 Regulated Area



1.3 Total Maximum Daily Loads and Waste Load Allocations

A TMDL is the total maximum daily load, or the amount of a pollutant allowable to be discharged to a water body and still have that water body meet its designated use and applicable water quality standards. There are three components to a TMDL as follows:

- Waste Load Allocation for point source contributions which are discharges from an identifiable source and location. The City's MS4 outfalls are defined as point source discharges and, therefore, fall under this category.

- Load Allocations (LA) for non-point source contributions which are from un-identifiable sources or locations and originate over a relatively large area.

- Margin of Safety (MOS) which is a required component that accounts for the modeling uncertainty and other unknown factors.

The WLA is a major component in the required reduction of pollutants needed to meet water quality standards. It may be allocated among many different point sources including the MS4 operator. Hampton's MS4 Individual Permit serves as the regulatory mechanism for addressing the load reductions described in the TMDL assigned to the MS4 operator, predominantly through the Action Plan. The expectation of VDEQ is for the MS4 operator to address the required WLAs for stormwater through the implementation of programmatic BMPs and other actions outlined in the MS4 special conditions. Once approved and implemented, these actions must be continued in order to maintain water quality standards and comply with the anti-degradation policy requirements.

1.4 MS4 General Permit - Special Conditions

The special conditions listed in the City's MS4 Individual Permit, Part I.D.2.a), require the development of TMDL Action Plans to address pollutants allocated to the MS4 in approved TMDLs. VDEQ has prepared a separate TMDL report for bacteria impaired stream sections within the Back River, *"Total Maximum Daily Loads of Bacteria for Back River in York County and Cities of Hampton, Poquoson, and Newport News, Virginia,"* February 11, 2014, which includes WLA's for sections within the City. The City operates its regulated MS4 within a portion of the Back River watershed, and, therefore must identify the actions to be implemented to reduce bacterial loadings from its MS4 regulated lands. These actions are presented in Section 4.0 herein and submittal of these actions satisfies the City's requirements under its MS4 permit to address the bacteria WLAs assigned in the approved TMDL reports.

2.0 Bacteria Water Quality Standards, Data and Applicable TMDLs

2.1 Water Quality Standards

VDEQ and the Virginia Department of Health-Division of Shellfish Sanitation (VDH-DSS) have collected several hundred samples at monitoring stations on the Back River since 1990. Over that period, sampling methods have changed as have the water quality standards; however, even with improvements in water quality noted due to aggressive programs implemented by the stakeholders since 2007, several segments continue to be impaired, violating the applicable fecal coliform, enterococci or *Escherichia Coli* (*E. Coli*) bacteria standards. Therefore, a TMDL study was completed by VDEQ on February 11, 2014 and subsequently approved by the EPA. This TMDL allocated WLAs to the City and other dischargers.

All three of these particular bacteria types are typically found in the lower intestines of warm-blooded organisms. Certain strains of the bacteria can survive for a limited amount of time outside of a host. Pollution from both point and nonpoint sources can lead to fecal coliform bacteria contamination of water bodies. Although most fecal coliform are not pathogenic, their presence in water indicates contamination by fecal material. For contact recreational activities such as swimming, health risks increase with increasing fecal coliform counts. If the fecal coliform concentration in a water body exceeds state water quality standards, the water body is listed for violation of the contact recreational use.

According to Virginia Water Quality Standards (9 VAC 25-260-10), *"all state waters, including wetlands, are designated for the following uses: recreational uses, e.g., swimming and boating; the propagation and growth of a balanced, indigenous population of aquatic life, including game fish, which might be reasonably expected to inhabit them; wildlife; and the production of edible and marketable natural resources, e.g., fish and shellfish."*

The water quality standard for recreational contact in riverine systems is currently based on *E. Coli* which is a better indicator of health risks than the fecal coliform indicator used prior to the 2003 adoption of the new standards. The water quality standard for recreational contact in saltwater transitional zones is now enterococci bacteria. Fecal coliform bacteria continues to be the standard used by VDH-DSS for shellfish safety.

Virginia adopted these EPA recommendations of using *E. coli* or enterococci standards for fresh water and enterococci criteria for marine waters and incorporated them into their existing standards outlined in 9 VAC 25-260-170 which were used in developing the Back River TMDL study and the development of this Action Plan. For a non-shellfish supporting waterbody to be in compliance with Virginia bacteria standards for primary contact recreation in a saltwater or transitional zone, the current criteria reads as follows:

"Enterococci bacteria shall not exceed a monthly geometric mean of 35 CFU/100 ml in transition and saltwater… If there are insufficient data to calculate monthly geometric means in transition and saltwater, no more than 10% of the total samples in the assessment period shall exceed enterococci 104 CFU/100 ml."

"E. coli bacteria shall not exceed a monthly geometric mean of 126 CFU/100 ml in freshwater... If there is insufficient data to calculate geometric means in freshwater, no more than 10% of the total samples in the assessment period shall exceed 235 E. coli CFU/100 ml."

VDEQ bacteria standard 9 VAC 25-260-160 outlines the criteria used for developing TMDLs for shellfish growing areas and reads as follows:

"In all open ocean or estuarine waters capable of propagating shellfish or in specific areas where public or leased private shellfish beds are present, and including those waters on which condemnation are established by the State Department of Health, the following criteria for fecal coliform bacteria shall apply:"

"The geometric mean fecal coliform value for a sampling station shall not exceed an MPN (most probable number)… of 14 per 100 milliliters (ml). The estimated 90th percentile shall not exceed an MPN of 43 per 100 ml for a 5-tube decimal dilution test or an MPN of 49 per 100 ml for a 3-tube decimal dilution test or MF test of 31 CFU (colony forming units) per 100 ml."

Table 2 below depicts an overview of the current VA-DEQ bacteria criteria in colony forming units (CFU)/100 ml for both shellfish and non-shellfish growing areas. All data compiled to develop these standards were calculated over a 30 month period. Therefore, if the consecutive 30 month period average for a stream section exceeded the geometric mean standard or the 90th percentile standard, then it was given an impaired designation.

Table 2 - Bacteria Criteria for Shellfish and Non-Shellfish Growing Areas

Standard	Geometric Mean (CFU/100 ml)	Single Sample Maximum (CFU/100 ml)
Non-Shellfish Growing Areas (9VAC25-260-170A) [1]		
E. Coli (Freshwater)	126	235
Enterococci (Saltwater and Transitional)	35	104
Shellfish Growing Areas (9VAC25-260-160)		
Fecal Coliform, 5-tube, 3-dilution test (MPN)	14	43
Fecal Coliform, 3-tube, 3-dilution test (MPN)	14	49

1 See 9 VAC 25-260-140 C for freshwater and transition zone delineation.

2.2 Water Quality Data

The VDEQ and VDH-DSS have monitored the Back River for bacteria concentrations during a period from 1990–2012 This monitoring included 44 fecal coliform measurement stations by VDH-DSS and 12 stations by VDEQ. VIMS analysis of data collected at the monitoring stations from 2008–2012 identified the impairments and need for the required TMDLs based on the fecal coliform bacteria standards, using the MPN method for the 90th percentile criterion (49 CFU/100 ml). The Back River TMDL provides information on the impaired streams within the Back River

watershed, presenting their type, designated use, impairment, criteria in which the specific stream exceeded and the year it was initially listed as impaired.

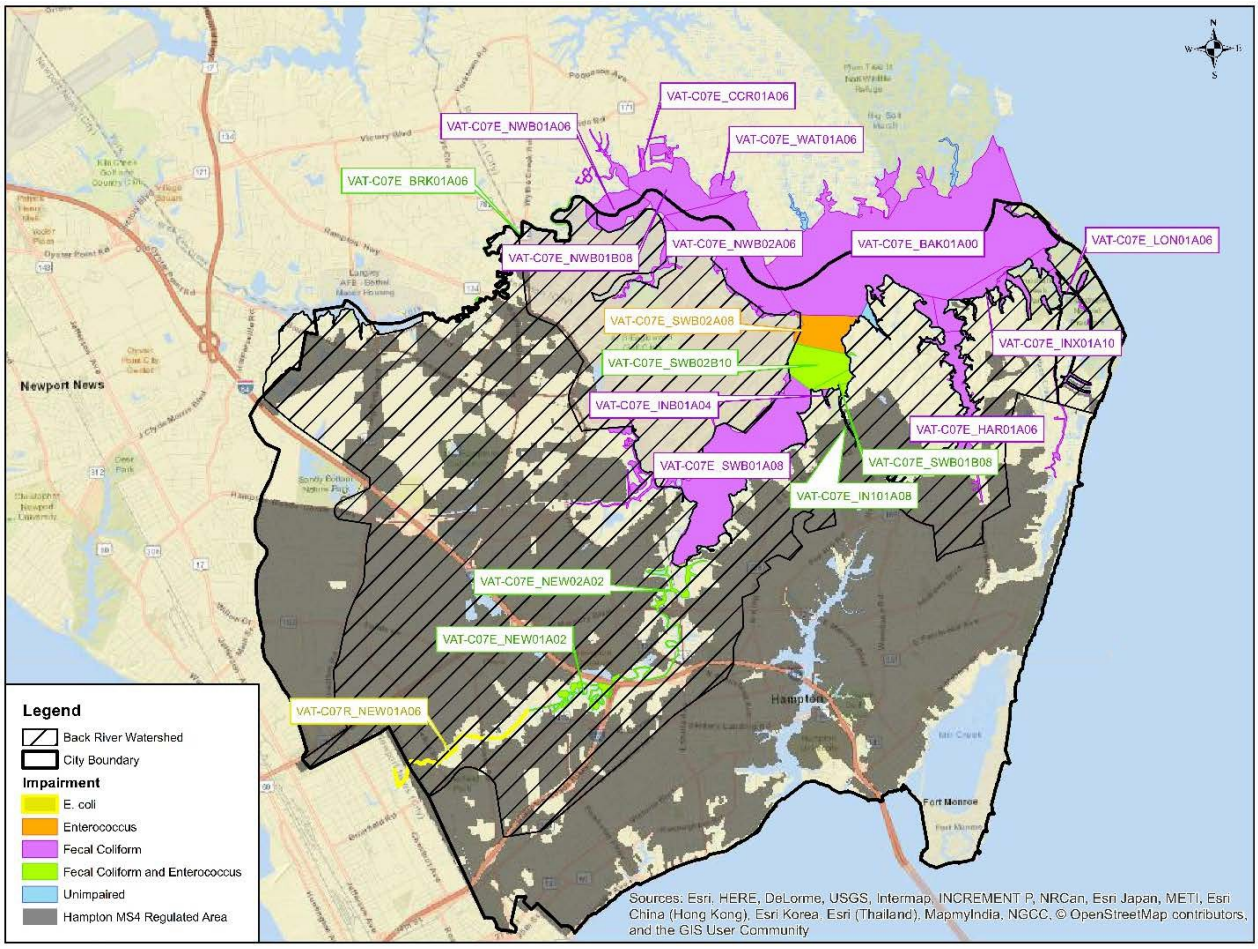
Table 3 below identifies the nineteen (19) impaired segments of the Back River that failed to meet water quality standards for bacteria (fecal coliform, enterococci and *E. coli*). Figure 2 shows the impaired segments in relation to the Back River Watershed and the City boundary.

Table 3 - Impaired Segments of the Back River

Assessment Unit	Water Name	Location Description	Cause Category	Cause Name	Size (mi2)
VAT-C07E_LON01A06	Long & Grunland Creeks - Back River	South shore trib. To mainstem Back R. Adjacent to Grandview area. CBP Segment MOBPH. DSS shellfish harvesting condemnation # 054-215 C (effective 20101115).	4A	Fecal Coliform	0.1
VAT-C07E_HAR01A06	Harris River - Upper	South shore trib. To mainstem Back R. Adjacent to Fox Hill area. DSS shellfish harvesting condemnation # 054-215 A (effective 20101115). CBP Segment MOBPH.	4A	Fecal Coliform	0.24
VAT-C07E_IN101A08	DSS Inlet #1 - Unnamed Inlet at Mouth of SW Branch	South shore trib. To mainstem Back R. Located east of mouth of SW Branch. CBP Segment MOBPH. DSS shellfish harvesting condemnation # 054-021 C (effective 20101115).	4A	Fecal Coliform	0.02
VAT-C07E_CCR01A06	Cedar & Topping Creeks	Located near City of Poquoson. Cedar & Topping Creeks are tribs to the north shore of the Northwest Branch of Back River. Portion of DSS condemnation # 054-021 B (less NW Br Back R./Brick Kiln Cr. portion) effective 20081119. CBP Segment MOBPH.	4A	Fecal Coliform	0.11
VAT-C07E_NWB01A06	Northwest Br. Back River - Upper [TMDL-CD]	CBP Segment MOBPH. Headwaters to confluence of Cedar Creek between Cedar Point and Marsh Point. Portion of DSS shellfish condemnation # 054-021 B (less Cedar/Topping & Brick Kiln Creeks, effective 20081119).	4A	Fecal Coliform	0.22
VAT-C07E_NEW01A02	Newmarket Creek - Upper	South of Blue Bird Gap Farm area. From end of tidal waters at Terrant ES (approx. RM 5.1) downstream to I-64 crossing (RM 3.68). CBP Segment MOBPH. Portion of DSS shellfish condemnation # 054-021 B (effective 20101115).	4A	Fecal Coliform & Enterococcus	0.07
VAT-C07E_NEW02A02	Newmarket Creek - Lower	South of Blue Bird Gap Farm area. From the I-64 crossing (RM 3.68) downstream to confluence with SW Br. Back R. CBP Segment MOBPH. Portion of DSS shellfish condemnation # 054-021 B (effective 20101115).	4A	Enterococcus	0.08
VAT-C07E_SWB01A08	SW Br Back River - Incl Tides Mill Cr [TMDL area]	Headwaters of Southwest Branch (incl tidal Tides Mill Cr) downstream to Langley View. CBP segment MOBPH. Portion of DSS shellfish condemnation # 054-021 B (effective 20101115).	4A	Fecal Coliform	1.06

Assessment Unit	Water Name	Location Description	Cause Category	Cause Name	Size (mi2)
VAT-C07E_WAT01A06	Watts Creek - (NW Br. Back River)	Located southwest of Poquoson. Watts Cr. trib to Northwest Br. of Back R. CBP segment MOBPH. Portion of DSS condemnation # 054- 021 D (effective 20101115).	4A	Fecal Coliform	0.06
VAT-C07E_BAK01A00	Mainstem Back River	From junction of Northwest and Southwest Branches downstream to mouth of Back River. Portion of CBP Segment MOBPH. DSS Condemnation 054-245 OPEN shellfish condemnations 20101115.	4A	Fecal Coliform	7.05
VAT-C07E_SWB02A08	Southwest Br. Back River - Mouth [DSS OPEN - No TMDL]	Lower portion to confluence with mainstem Back R. CBP Segment MOBPH. Portion of DSS shellfish (OPEN) condemnation #054-021 (effective 20081119)	5A	Enterococcus	0.23
VAT-C07E_NWB01B08	Northwest Br. Back River - Upper [TMDL not CD]	Northwest Br. Back River upper portion from confluence of Cedar Creek downstream to confluence Tabbs Cr. Portion DSS shellfish condemnation # 054-021 B (less Cedar/Topping & Brick Kiln Creeks, effective 20081119). CBP Segment MOBPH.	4A	Fecal Coliform	0.26
VAT-C07E_INX01A10	Unnamed Inlet - Back R South Shore near Wallace Cr	Unnamed Inlet Back R South Shore near Wallace Cr west of Dandy Point. CBP Segment MOBPH. DSS shellfish condemnation # 054-215 D (effective 20081119).	5B	Fecal Coliform	0.01
VAT-C07E_SWB01B08	SW Br Back River - Outside DSS Inlet #1 & #2 [TMDL area]	At Langley View. CBP segment MOBPH. Portion of DSS shellfish condemnation OPEN # 054-021 (effective 20101115)	4A	Fecal Coliform & Enterococcus	0.04
VAT-C07E_SWB02B10	SW BR Back R - DSS OPEN [TMDL]	Headwaters of Southwest Branch downstream to Langley View. CBP segment MOBPH. Portion of DSS shellfish OPEN condemnation # 054-021 (effective 20101115)	4A	Fecal Coliform & Enterococcus	0.36
VAT-C07E_BRK01A06	Brick Kiln Creek	From 0.3 mi. downstream of Big Bethel Res. dam (approx. RM 5.0, end of tidal waters north of Ebenezer Church) downstream to confluence with Northwest Br. Back R. CBP Segment MOBPH. Portion of DSS shellfish condemnation # 054-021 A (effective 20101115).	4A	Enterococcus & Fecal Coliform	0.09
VAT-C07E_INB01A04	DSS Inlet #2 - Unnamed Inlet S. Shore of SW Br. Back River	South shore trib. To Southwest Branch Back R. Located near mouth of SW Branch, west of unnamed DSS Inlet #1. DSS condemnation # 054-021 (effective 20101115). CBP Segment MOBPH.	5A	Fecal Coliform	0.07
VAT-C07R_NEW01A06	Newmarket Creek - Lower Riverine	Lower Riverine, Recreation	5A	*E. Coli*	0.04
VAT-C07E_BAK01C10	Back River - S Shore at Mouth Wallace Cr.	South Shore Back R. near Grunland Cr. Portion of CBP Segment MOBPH. Portion of DSS shellfish condemnation # 054-215 B	4A	Fecal Coliform	0.039

Figure 2 - Back River Impairments



As seen in the Table 3 and Figure 2 above, both tidal and riverine segments of the Back River are currently listed as impaired on Virginia's 305(b)/303(d) Water Quality Assessment Integrated Report due to violations of the enterococci, *E. coli* and fecal coliform bacteria standards.

2.3 TMDL and Assigned WLA

A WLA was calculated for each stream and assigned to the existing point sources, including MS4 permit operators, along with a LA and MOS to meet the water quality standard. The TMDLs were established based on a scenario where no violations of the water quality standards would occur and included reductions from various land uses such as agriculture, wildlife, and residential uses.

The WLA's assigned to the City in this TMDL report are aggregated to include the allocation from regulated lands of some adjacent MS4 operators. In this TMDL the WLA is aggregated between the City and the Virginia Department of Transportation (VDOT) (VAR040115), Thomas Nelson Community College (TNCC) (VAR040087) and Langley Air Force Base (VA0083194) as shown in Table 4 below.

Table 4 - Annual and Maximum Daily Fecal Coliform TMDLs

Impairment	WLA	LA	MOS	TMDL
Maximum Daily Bacterial TMDLs (counts/day)				
Back River	2.38E+12	2.98E+12	Implicit	5.35E+12
MS4 Hampton (VA0088641) [1]	1.83E+12			
Maximum Annual Bacterial TMDLs (counts/year)				
Back River	3.87E+14	4.82E+14	Implicit	8.73E+14
MS4 Hampton (VA0088641) [1]	2.99E+14			

[1] Aggregated WLA for Hampton, VDOT (VAR040115), TNCC (VAR040087) and Langley Air Force Base (VA0083194).

The TMDL and WLAs were completed as a draft on June 31, 2013 and a public hearing was held for public input. The TMDL was finalized and approved on February 11, 2014 by VDEQ, April 24, 2014 by EPA and June 30, 2014 by the State Water Control Board. Additionally, all TMDLs were presented as fecal coliform counts since *"loadings of enterococci and E. coli from upstream tributaries will influence the downstream bacterial concentrations in the Back River for which the fecal coliform criteria apply."* (VIMS, 2014)

2.4 Potential Sources, Required Reductions and Opportunities

The TMDL study for the Back River examined the watershed characteristics and potential sources of bacteria to the River. Using monitoring data, bacterial source tracking, and watershed models, VDH-DSS and VDEQ collected water quality monitoring data, analyzed potential sources and subsequently assigned maximum allowable loads to each source in the watershed, in order to bring the Back River into compliance with the water quality standard for the corresponding designated use (e.g., swimming, drinking, shellfish harvesting, etc.).

The TMDL report lists the primary sources of bacteria loadings for the Back River as nonpoint sources which range from human-derived sources (e.g., septic system failures, sanitary sewer overflows (SSO)), pet waste, livestock and wildlife. Table 5 presents a summary of primary bacteria loading sources within the total Back River watershed and the City.

Table 5 - Bacteria Loading Sources and Required Reductions in Back River Watershed

Bacteria Source	Back River Total	City of Hampton Characteristics	Total Watershed Loadings (Daily)	Loading Percent	Reduction in Daily Load Needed
Total Livestock	1,049	Unknown	3.92E+12	9%	100%
Total Wildlife	39,276	Unknown	2.76E+13	62%	1%
Human - Total			2.87E+12	6%	100%
Population (2011)	*188,898*	*136,836*			
Households	*81,829*	*60,118*			
Homes on Septic	*613*	*419*	*5.27E+09*	*0.0%*	
Sanitary Sewer Overflows	*134*	*123*	*2.68E+12*	*5.5%*	
Marinas (slips)	*306*	*238*	*1.84E+11*	*0.5%*	
Pets	10,731	6,972	1.03E+13	23%	99%
Total			**4.47E+13**	**100%**	**37%**

As part of the TMDL development, several scenarios were modeled to develop the required loading reductions needed in order to achieve compliance with water quality standards. These scenarios determined that it would require maximum reductions in loadings from livestock (100%) human inputs (100%) and pet waste loadings (99%), as summarized in Table 5 above.

An analysis of land uses within the watershed is important in identifying potential opportunities for reducing loadings since these sources are closely related to land use. The Back River watershed is 36,905 acres (57.7 square miles) and consists of military reservations, residential, commercial and industrial uses. Of that total, there are approximately 13,710 acres (21.4 square miles), or 37.15% within the Hampton MS4 that drain through the Back River, indicating a significant portion of the MS4 regulated area is directly adjacent to the impaired segments of the Back River.

There are numerous land use types that contribute bacteria loadings to the Back River waters including parks, schools, septic tanks, ponds (i.e., geese or wildlife attractors), agricultural lands with livestock, marinas and Bluebird Gap Farm, which houses approximately 150 domestic and wild animals. Additionally, there are 613 septic tanks in the Back River watershed and 196 (32%) in the City's Back River MS4 regulated area. Identifying which of these sources and land uses are the main contributors to the bacterial loadings will facilitate the development of programs and actions to reduce these loadings. The City's contribution to these potential sources within the Back River watershed is summarized in Table 6 below.

Table 6 - Hampton's Potential Pollutant Sources

Facility/Land Use	Potential Source	City of Hampton's Contribution
Parks	Pet/Animal Waste	20 - 1,104 acres
Public Schools and Facilities	Pet Waste	27 - 417 acres
Private Schools	Pet Waste	10 - 85 acres
Agricultural Lands/Livestock	Animal Waste	452 acres
Bluebird Gap Farm	Animal Waste	85 acres
Open Water/Ponds	Wildlife	193 acres

Table 7 below outlines the existing land uses within the City's portion of the Back River watershed. Comparing the land uses with the potential sources, provides additional information and indicators as to which land uses the City should focus on when targeting programs to achieve the most effective bacteria reductions. Due to the land use characteristics and primary sources of bacteria targeted for control, there are numerous opportunities in the MS4 to develop meaningful actions.

Table 7 – City of Hampton Back River Watershed Land Use

	Barren	Agriculture	Forest	Pasture	Urban Impervious	Urban Mixed	Wetlands and Open Water	Sum
Acreage	321.2	294.3	5,099.2	15.5	5,548.5	11,669.1	2,853.2	25,801
Percentage	1.2	1.1	19.9	0.1	21.5	45.2	11.0	100
Bacteria Source		Livestock		Livestock	Pet Waste Overflows	Pet Waste Overflows	Wildlife	

This report identifies existing stakeholder actions and newly identified actions (presented in Section 4.0) within the MS4 area of the targeted watershed. These collective actions are likely to significantly reduce bacteria in the impaired stream segments. The City's MS4 regulated area is approximately 37% of the Back River watershed; and its actions will, therefore, have substantially more influence on the downstream impaired segments than the remaining MS4 permittees; the next largest contributor comprises only 6.9% of the Back River watershed.

The summary data presented in this plan considers Hampton's entire contribution to the Back River and not just the MS4 regulated area within the watershed. Any reduction measures implemented by the City to address TMDLs are likely to be procedural in nature (e.g., ordinances, public outreach, etc.), which would be enacted city-wide and not specifically limited to the Back River watershed or the MS4 regulated area.

3.0 Existing City Practices and Programs Summary

3.1 Overview

Restoring water quality in impaired watersheds is typically planned through the use of an Implementation Plan (IP) developed upon completion and approval of a TMDL. Typical IPs include:

- State and Federal Requirements
- Review of TMDL Development
- Public Participation
- Implementation Actions
- Measurable Goals and Milestones for Attaining Water Quality Standards
- Stakeholders' Roles and Responsibilities
- Integration With Other Watershed Plans
- Potential Funding Sources

No Implementation Plan for the Back River watershed has been developed to date. However, the City currently engages in many practices and programs unilaterally and in conjunction with other stakeholders which help to reduce the levels of bacteria in the Back River watershed. These ongoing actions have already been initiated in response to various programs, and are expected to continue to reduce bacteria loads to the targeted waterbodies. The existing practices outlined in Section 3.3 below are not the TMDL actions required in the City's Individual MS4 Permit. They have been included to provide an overview of the extensive programs that the City and other stakeholders are engaged in outside of the TMDL process to protect the Back River water quality. The existing programs and practices which aid in reduction of bacteria levels within the Back River and its tributaries are as follow.

- Sanitary Sewer System Improvements
- Septic System Programs
- Sewer Extensions
- Stormwater Quality Programs
- Pet Waste Programs
- Aquatic Resources Restoration
- Land Use Management
- Wildlife Contribution Controls
- Chesapeake Bay TMDL Action Plan Projects
- Public Outreach and Training Programs
- Water Quality Monitoring Programs

3.2 Stakeholders

Many of the programs and practices currently in place have been underway prior to the development of the Back River TMDL. Some have been undertaken by federal, state, regional and local agencies and non-governmental organizations along with the City in a collaborative effort to achieve the primary goal of reducing bacteria concentrations within the Back River waters. Other actions are scheduled to be implemented in the future. Hampton, along with other

stakeholders, continues to implement programs and practices targeting bacteria loading reductions to the Chesapeake Bay. Stakeholders were identified during the development of this action plan and include:

- City of Hampton
- City of Newport News
- City of Poquoson
- York County
- Hampton Roads Planning District Commission
- Hampton Roads Sanitation District
- NASA – Langley Research Center
- Thomas Nelson Community College
- US Army
- US Airforce
- US Census Bureau
- US Department of Agriculture
- US Environmental Protection Agency
- US Geological Survey
- US Fish & Wildlife Services
- Virginia Department of Conservation and Recreation
- Virginia Department of Environmental Quality
- Virginia Department of Game and Inland Fisheries
- Virginia Department of Health
- Virginia Department of Transportation
- Virginia Marine Resources Commission

3.3 Existing Water Quality Improvement Programs to Date

Due to its probable major contribution to the bacterial loading in the Back River, the City must play a significant role in reducing bacteria concentrations within the watershed. Hampton already has many programs and practices in place to improve water quality within the Back River and will continue these programs to treat stormwater runoff, prevent SSOs, and manage runoff from land use development to the maximum extent practicable, as directed by City Council and as required by law. Actions already undertaken by the City to improve water quality include:

Sanitary Sewer Improvements

The Hampton Department of Public Works and HRSD provide wastewater collection and treatment service to City residents and businesses in the City. The City has recently entered into an agreement with HRSD called the Hybrid Consolidation Plan with the localities it serves, including Hampton, under which the City is responsible for its systems operation and maintenance and HRSD will undertake actions to reduce SSOs from their systems through repairs and rehabilitation outlined in its Regional Wet Weather Management Plan (RWWMP).

Actions completed prior to the development of this Action Plan include the development and implementation of a Sanitary Sewer Evaluation Survey (SSES) and the development of the Condition Assessment and Rehabilitation Plan. The SSES had three phases which have been

completed. The first phase involved the physical inspection of 100% of the sewer manholes in each SSES basin. The second phase involved the smoke testing of the system to identify leaks and interconnections with the stormwater system and the third phase involved the closed circuit TV inspection of the sewer lines. The Condition Assessment and Rehabilitation Plan was then developed, which identified improvements to the system necessary to correct deficiencies. This plan will be implemented over the next 20 years through the RWWMP.

Current projects undertaken by the Hampton Department of Public Works have been substantial and have significantly reduced infiltration and SSOs to the impaired waterways. Some of the more notable projects completed during FY 2016 include:

- Gravity Line Cleaning, Inspection and Testing
    - 118,440 linear feet (LF) of closed-circuit television (CCTV) inspections
    - CCTV manhole inspections and sewer main smoke testing is planned to be resumed in 2017.
    - 224,076 LF sewer main was cleaned
- Gravity Line Construction and Repair
    - Two Work Packages were completed
        - 2,400 LF of gravity sewer installation
        - 3,500 LF of gravity sewer rehabilitation
- Pump Station Maintenance and Operation
    - 456 PS preventative maintenance inspections completed
    - PS 134 and 123 force main replacement project
    - PS126 internal equipment upgrade
    - PS 23 internal equipment upgrade to eliminate a known overflow point.
- Force Main Maintenance
    - Force Main Repairs
        - Prince Philip St – PS 111 force main
        - Lynnhaven Dr – PS 127 force main
    - Force Main Replacement
        - PS 134 and 123 force main replacement project approximately 6,350 LF of 10” force main.
        - PS 23 force main re-alignment approximately 3,600 LF.

Septic System Programs

Most of the City’s household sanitary sewage is discharged to the public sewer system. Data collected during the development of the Back River TMDL study indicated 613 properties use septic throughout the Back River watershed (all contributing localities), which have a failure rate of 12%, as estimated for the Tidewater Region in the Back River TMDL study. Septic Systems in the City continue to be reduced as new connections to the public sewer are made through sewer extensions. These sewer extensions allow property owners to connect to the sanitary sewer system and abandon/remove their septic tanks, effectively reducing the risk of septic tank discharges.

In accordance with City Ordinance Section 30-70, the abandoned septic tanks must be drained, crushed and backfilled with clean material to remove any risk of sewage leaving the tank. In accordance with City Ordinance Section 30-69, *“All septic systems located within Chesapeake*

Bay Preservation Districts shall be pumped out at least every five (5) years." The ordinance also states that pump outs must be conducted by a qualified individual holding a valid sewage handling permit and the health department shall be notified upon completion. During fiscal year 2016, 114 septic tank pump outs were reported to the Virginia Department of Health. The following list presents the completed/planned sewer extensions within the Back River watershed as of 2016.

Sewer Extensions

- Canal Road off of Beach Road
  - Completed 2016
  - 1,600 LF sewer extension
  - Ability to take 3-5 homes off septic
- Oakville Road
  - Completed 2016
  - 2,100 LF sewer extension
  - Ability to take 10 homes off septic
  - One home already connected
- Hall Road
  - Planned
  - 500 LF sewer extension
  - Ability to take 1-2 homes off septic
- 1422 Todd's Lane
  - Planned
  - 120 LF sewer extension
  - Will take one (1) home off septic

Stormwater Quality Programs

Pursuant to the City's MS4 permit Part 1.B.2, the City is required to implement the following programs which are in part intended to reduce the bacteria concentrations delivered to the impaired watersheds through its stormwater runoff.

a) Retrofitting on Prior Developed Lands
b) Illicit Discharges and Improper Disposal
c) Spill Prevention and Response
d) Industrial and High Risk Runoff
e) Stormwater Infrastructure Management
f) Assessment of City Facilities
g) Public Education/Participation
h) Training
i) Dry Weather Screening Program

Many of these action items are identified in the City's Annual MS4 Reports and have been incorporated into the City's permit, which are currently being implemented. These actions are implemented city-wide and not limited to the Back River watershed or the MS4 regulated area. In addition, there are several stormwater quality programs identified beyond the MS4 permit programs that the City is participating in to reduce bacterial loadings including:

Pet Waste Programs

Table 5, in Section 2.4 herein, assigns a 99% required reduction of bacterial loadings to the Back River from pets. Hampton has legal authority in place to penalize dog owners who do not pick up after their pets in Chapter 5 Article I of the City's Code of Ordinances. Section 5-8.1 states, *"It shall be unlawful for any person owning, keeping or having custody or control of a dog to fail to remove immediately the dog's excrement from any public or private property other than property owned or occupied by the person owning, keeping or having custody or control of said dog."* The ordinance goes on to state that any violation may result in a Class 4 misdemeanor.

Recognizing that bacterial impairments were a city-wide problem, the Hampton Clean City Commission (HCCC) adopted the HRPDC Scoop-the Poop campaign and in conjunction with HRPDC and neighborhood associations have placed 30 pet waste stations in the Back River watershed. The HRPDC Scoop-the-Poop program has helped fund 14 city-owned/privately maintained pet waste stations throughout the Back River watershed. Additional pet waste stations are slated to be installed within the Back River watershed in the near future. Public outreach for the pet waste program is conducted by the HRPDC through their askHRGreen program.

Table 5 also reports the City must reduce 100% of bacterial loadings from livestock within the Back River watershed. Chapter 5 Article II of the City's Code of Ordinances addresses sanitary requirements for livestock. Section 5-24.(c), addressing livestock such as fowl, cattle, horses, sheep and goats, states, *"Every person maintaining a poultry or animal yard shall keep the same clean and sanitary and free from all refuse, decaying food and excrement."* Section 5-24.1.(g) of the City's ordinance, pertaining to domestic chickens, states, *"No person shall store, stockpile or permit any accumulation of chicken litter and waste in any manner whatsoever that, due to odor, attraction of flies or other pests, or for any other reason diminishes the rights of adjacent property owners to enjoy reasonable use of their property."*

Currently, the City has no programs targeting livestock bacteria reduction other than the existing ordinance.

Aquatic Resource Restoration

The City has implemented a watershed restoration approach identified as an initiative in its Comprehensive Waterways Management Plan which targets addressing issues associated with the local waterways. In 2010 the Hampton City Council established the Hampton Comprehensive Waterways Management Plan Steering Committee to provide guidance on future city policy and investments focused on four areas; tidal flooding, stormwater management, shoreline protection and waterway maintenance and management. This 18-member steering committee, along with four subcommittees comprised of nearly 60 total members, submitted the management plan for public input on October 25, 2011, which was subsequently approved by City Council after the public comment process.

Land Use Management

Land disturbing activities within the City are regulated under its "Virginia Stormwater Management Program" which has been updated to incorporate the requirements of the Virginia Erosion and Sediment Control Program as well as the Chesapeake Bay Preservation Act, the Virginia Stormwater Management Program (VSMP), and the State's General Permit for Discharges of Stormwater from Small MS4s and other controls to protect the water quality of the City's lakes and streams. Development practices require buffers from wetlands, shorelines, and highly erodible soils which help reduce bacteria loadings.

Wildlife Contribution Controls

The City encourages pond buffers or setbacks to both help filter stormwater and to discourage resident wildlife populations. DEQ's BMP guidance documents provide guidelines on the effective placement and size (width) of buffers. Native shrubs and ground covers are recommended in the non-forested areas of the buffer to discourage wildlife. Annual mowing is not required in the pond buffer except in maintenance right-of-ways.

Chesapeake Bay TMDL Action Plan Projects

The City will continue implementing and maintaining projects identified as part of its Chesapeake Bay TMDL Action Plan. Its primary purpose is the reduction of nutrients and sediments to the Chesapeake Bay*;* however, these programs and actions contained in that plan will also serve to reduce the anthropogenic sources of bacteria within the Back River watershed. Because the Back River watershed is a direct tributary to the Chesapeake Bay, implementing BMPs to help achieve the TMDL Bay goals by reducing sediment and nutrients loads will also help to reduce bacteria levels in the river. Projects included in the plan within the Back River basin to date are presented in Table 8 below.

Table 8 - Chesapeake Bay TMDL Projects

Project	Date Constructed	Type	Cost
Coliseum Lake Retrofit	FY2017	Wet Pond (L2)	$1,578,000
Burbank Elementary School	FY2017	Wet Pond, Wetland, Bioretention (x2)	$575,000
Forrest Elementary (part of Todd's Lane/Big Bethel Rd Intersection Improvements) VDOT Revenue Share	N/A	Wet Swale (L2)	$1,180,000
Lynnhaven Lake	FY2018-2019	Wet Pond (L2)	$850,000
Cherry Acres Swale Conversion	FY2018-2019	Channel Widening and Linear Wetland	$732,000
Kecoughtan Road Wet Pond	FY2018-2019	Wet Pond	$443,100

Project	Date Constructed	Type	Cost
Linear Wetland (Mohawk/Eastmoreland)	FY2018-2019	Wetland	$489,000
King St Wetland	FY2018-2019	Wetland	$807,145
Pochin Place	FY2017-2019	Wetland	$1,675,000
Winchester Drive Drainage Improvements	FY2017-2018	Stream Restoration	$700,000

Public Outreach and Training Programs

Public outreach and City employee training programs, pursuant with Parts 1.B.2.j) and k) of the City's MS4 Permit, are targeted at educating the public and City employees with regards to stormwater management and bacteria source reduction to meet its WLA and Back River water quality standards.

The permit allows a regional approach to these outreach and training initiatives which may include multiple MS4 localities. The following outreach programs identify the City's strong commitment to environmental education programs to improve water quality in the Area:

- Hampton Clean City Commission - the HCCC was formed to enhance the environment throughout Hampton by educating citizens and encouraging their participation in City beautification projects, solid waste management education, coastal awareness activities, and litter abatement programs. Several education programs undertaken by the HCCC are aimed at improving local water quality and are relevant to reducing bacteria loadings including:
    - Hampton Waterways Restoration Project
    - Pet Waste Education
    - Rain Barrel Workshops
    - Stormwater BMP Factsheets
    - Youth Education Programs
- Hampton Roads Planning District Commission's askHRgreen - HRPDC's askHRgreen program is a public awareness program aimed at promoting environmentally friendly practices throughout the Hampton Roads area. The program is a regional approach with 17 local cities and counties cooperating together. Information regarding all askHRgreen programs can be found on www.askHRgreen.org, and the programs addressing water quality improvement include:
    - Bay Star Homes
    - Pet Waste Stations Grant and Education
    - HRFOG (Fats, Oils and Grease) Program
- Virginia Cooperative Extension (VCE) - VCE provides educational outreach to citizens throughout Virginia on the importance of improving the environment. VCE is a collaborative outreach program of Virginia Tech and Virginia State University working with local volunteer groups. It is part of the National Institute for Food and Agriculture, an agency of the US Department of Agriculture. The following local volunteer groups are extensions of VCE and provide public education and outreach, along with service projects, to improve water quality:

    - Virginia Master Naturalists
    - Extension Master Gardeners
- Employee Training
    - Public Works Department External and Internal Training
        - Illicit Discharge Detection and Elimination (IDDE)
        - Spill Response
        - Good Housekeeping

Water Quality Monitoring Programs

In order to gather additional information about the distribution of bacteria sources in the watershed, the City monitors sites throughout the City and Back River watershed, in conjunction with other city departments, local citizen groups and regional, state and/or federal agencies. In addition to the ongoing water quality monitoring programs, Hampton operates their 311 system, where citizens are able to call in and report illicit discharges for investigation. The following list outlines the existing monitoring programs.

Dry Weather Screening

Part 1.B.2.l), Dry Weather Screening Program, requires the Permittee to, *"continue ongoing efforts to detect the presence of illicit connections and unauthorized discharges to the permittee's MS4."* To comply with this requirement, the City monitors sixty stormwater locations, which is the permit required minimum number of sites, to identify and eliminate any potential illicit discharges to the Back River, and other local waterways. The City's Public Works Department monitors the sixty locations city-wide through their IDDE program, locations vary annually. These samples are taken during dry weather periods, defined as less than 0.1" in 48 hours, to identify any non-stormwater discharge sources entering the storm system. Monitoring parameters include ammonia, chlorine, copper, *E. coli*, fecal coliform, nitrates, pH, phenols, phosphates, salinity and temperature.

Wet Weather Screening

Pursuant with the City's individual VPDES permit requirements, Part 1.C In-System/Wet Weather Monitoring, the City must monitor two stormwater sites, quarterly at a minimum, to characterize the stormwater entering the MS4 system as well as identify the POCs based on different land use classifications. This monitoring is accomplished through Hampton's Regional Wet Weather program, in conjunction with HRSD, HRPDC and the USGS. The two sites monitored by the Regional Wet Weather program are both located in the Back River watershed. These sites are located at the intersection of Pine Chapel Road and Coliseum Drive (commercial land use) and in the large drainage canal behind the homes along Garrett Drive (single-family residential land use). Monitoring parameters include temperature, total suspended solids, ammonia as nitrogen, nitrate plus nitrite nitrogen, total Kjeldahl nitrogen, total nitrogen (calculated), orthophosphate and total phosphorus.

The wet weather screening process is accomplished through the partnership with HRSD, HRPDC and the USGS. The USGS serves in the capacity of overall project leader, responsible for all study design, site selection and analysis of collected data. The USGS will oversee HRSD as HRSD will conduct all the major field operations which include site installation, sample collection and site

maintenance. Additional responsibilities for HRSD include laboratory analysis of collected samples and their knowledge of the area allows them to help USGS with appropriate site selection. HRPDC coordinates with USGS and HRSD in the data collection and analysis process and also helps coordinate all the necessary funding. A Memorandum of Understanding was signed between HRPDC and localities interested in participating in the Regional Wet Weather program, including the City.

Citizen Monitoring Programs

Two citizen monitoring groups provide additional stormwater monitoring throughout the City and Back River watershed. The first group of volunteer citizen monitors, the Hampton Waterways Restoration Project Committee (HWRP), is overseen by the HCCC and monitors four sites throughout the City, including three sites within the Back River watershed. The three sites monitored by HWRP within the Back River watershed are located at Gosnold Hope Park, Long Creek near Grandview Nature Preserve and Newmarket Creek at the Air Power Park.

The second volunteer citizens monitoring group, the Peninsula Chapter of the Virginia Master Naturalists, which is backed by the Hampton Virginia Cooperative Extension, monitors six sites throughout the City, including one site within the Back River watershed at Blue Bird Gap Farm.

3.4 Stakeholder Management Action Success

As a result of stakeholder actions, water quality in the Back River has improved. The TMDL report notes that the water quality samples taken from 2007-2012 have shown improvement over the previous sampling periods. This improvement to water quality is attributed to the aggressive programs taken by the City and other stakeholders to reduce infiltration and sewage overflows. Continued Action Plan implementation is needed, however, in order to assure that the water quality improvements are maintained.

4.0 Back River MS4 Required TMDL Action Plan

The City operates its MS4 on regulated lands within the watershed of the impaired segments of the Back River and is, therefore, subject to the bacteria WLAs it was assigned in the approved TMDL. As a result, the City must maintain an updated MS4 Program Plan that includes specific Action Plans addressing the impairments. The listed waters include impairments to water quality standards using various indicators of harmful bacteria including fecal coliform, *E. coli* and enterococci, collectively referred to as "bacteria" in the Action Plan. This section of the report includes those specific required actions to address the impaired waters.

The overall actions presented in this section are programmatic in nature and are designed to achieve reductions in fecal coliform, *E coli*, or enterococci bacteria. Numeric reductions achieved through the proposed actions presented below have not been quantified or modeled to demonstrate that they will achieve the applicable receiving water quality standard. Rather, the proposed actions the City will implement were selected since they have been previously demonstrated by others to achieve high levels of bacterial loading reductions from the identified sources. The resulting improvements to water quality within the Back River will be demonstrated through continued monitoring by VDEQ. These permit-required actions are presented in Part 1.D.2.b) of the City's MS4 individual permit and include:

1) *Develop and maintain a list of its legal authorities such as ordinances, permits, order, specific contract language, and inter-jurisdictional agreements applicable to reducing the pollutant identified in a WLA;*
2) *Identify and maintain an updated list of all additional management practices, control techniques and system design and engineering methods, beyond those identified in Part 1.B of this state permit, that have been implemented as part of the MS4 Program Plan that are applicable to reducing the pollutant identified in the WLA;*
3) *Enhance the public education and outreach and employee training programs to also promote methods to eliminate and reduce discharges of the pollutants identified in the WLA;*
4) *Assess all significant sources of pollutant(s) from facilities of concern owned or operated by the MS4 operator that are not covered under a separate VPDES industrial stormwater permit and identify all municipal facilities that may be a significant source of the identified pollutant. For the purpose of this assessment, a significant source of pollutant(s) from a facility of concern means a discharge where the expected pollutant loading is greater than the average pollutant loading for the land use identified in the TMDL. (For example, a significant source of pollutant from a facility of concern for a bacterial TMDL would be expected to be greater at a dog park than at other recreational facilities where dogs are prohibited);*
5) *Develop and implement a method to assess TMDL Action Plans for their effectiveness in reducing the pollutants identified in the WLAs. The evaluation shall use any newly available information, representative and adequate water quality monitoring results, or modeling tools to estimate pollutant reductions for the pollutant(s) of concern from implementation of the MS4 Program Plan. Monitoring may include BMP, outfall, or in-stream monitoring, as appropriate, to estimate pollutant reductions. The permittee may conduct monitoring, utilize existing data, establish partnerships, or collaborate with other*

MS4 permittees or other third parties, as appropriate. This evaluation shall include assessment of the facilities identified in Part 1.D.2.b)4) above. The methodology used for assessment shall be described in the TMDL Action Plan; and

6) *Solicit public input on the draft TMDL Action Plan and consider public comments in development of the final TMDL Action Plan that is submitted to the Department for review and approval.*

4.1 Legal Authority – Part I.D.2.b)1)

The City's MS4 permit requires the City as the MS4 conveyance system owner and operator to maintain an updated MS4 program plan that includes a specific TMDL Action Plan for pollutants allocated to the MS4. The actions developed address the sources of bacteria generated and discharged from regulated areas, as required. However, these actions apply more broadly to both the regulated and non-regulated lands within the City.

The City is required to – *"Develop and maintain a list of its legal authorities such as ordinances, state and other permits, orders, specific contract language, and inter-jurisdictional agreements applicable to reducing the pollutant identified in each applicable WLA."* [Part I.D.2.b)1)]

The City has reviewed its current MS4 program and has determined that it has in place all of the legal authorities that it needs to implement any of the TMDL actions identified in this plan. It has also reviewed its current inventory of regulated areas and has determined that it is up to date. These local regulations are incorporated into the Hampton City Code as follows:

Chapter 5 Article I Section 5-8.1 – Removal of Dog Excrement Required.
Chapter 5 Article II – Agricultural Animals
Chapter 9 Article II O - CBP District - Chesapeake Bay Preservation Overlay.
Chapter 13.1 – Land Disturbing Operations.
Chapter 30 – Sewers and Sewage Disposal.
Chapter 33.2 – Stormwater Management.
Chapter 41.1 – Wetlands.

4.2 Additional Management Practices and Actions – Part I.D.2.b)2)

As an element of the TMDL Action Plan, the City must maintain a list of all measures that it takes **in addition** to the minimum control measures that it currently implements as part of its MS4 Permit requirements, presented in Part 1.B, as follows:

"Identify and maintain an updated list of all additional management practices, control techniques and system design and engineering methods, beyond those identified in Part I.B of this state permit that have been implemented as part of the MS4 Program Plan that are applicable to reducing the pollutant identified in the WLA." [Part I.D.2.b)2)]

The proposed management practices and actions include expanding or implementing the following projects:

Monitoring Programs

Ambient water quality monitoring programs are important to help identify problem areas or "hot spots" where bacteria loadings may be excessive so sources can be effectively identified and targeted. The City will continue to support the current monitoring efforts presented in Section 3.3 above which includes sampling at the 4 locations.

Additionally, the City will evaluate the feasibility of expanding the City's current monitoring efforts to evaluate:

1. New locations and the frequency of sampling to include post rain events.
2. Installation of an additional rain gauge at Gosnold Hope Park.
3. Alternative testing/analytical procedures that could be more cost effective.

BMP Bacteria Retrofit Programs

Many structural BMPs have features which can increase bacteria removal, for example, using aeration/mixing to promote higher dissolved oxygen levels will promote reductions. Also, mixing will allow the bacteria to be exposed to ultraviolet radiation much longer resulting in increased die off as well as exposure to predation by other organisms. Forebays and other pretreatment features will also increase bacteria removals.

The City will conduct a review of recent studies and other documentation to determine the potential to facilitate bacteria reduction improvement by bringing the facilities up to today's design standards. The focus of the evaluation will be to increase nutrient (nitrogen, phosphorus and total suspended solids) removals; however, the features added during the potential retrofits, including forebays, aeration, aquatic benches, vegetated buffer, etc., will also have the potential to provide bacteria reduction benefits. This effort will include a GIS study and inspection of existing BMPs to identify those that could be cost effectively retrofit to increase nutrient and bacteria reductions.

A monitoring study will also be conducted to evaluate the effectiveness of potentially retrofitted BMPs and/or installation of aeration systems. This effort will include a GIS study and inspection of existing and approved BMPs for development or from as-built plans to select the appropriate BMPs for monitoring. It is anticipated that sampling will occur at the input and output of the selected BMP for comparison to evaluate the potential retrofit feature.

Marinas and Pump Outs

Controlling bacteria loadings at marinas adjacent to impaired waters is an important source reduction technique and can be implemented through public outreach and "No Discharge" education. In addition, providing information to boaters on the location and use of sanitary waste pump-out facilities will help reduce vessel sewage discharges to local waters.

The City along with several other municipalities have entered into an agreement, "The Hampton Roads Boater Pump-Out Internship Program" with HRSD, to educate local boaters about proper disposal of vessel sewage at marinas within HRSD's service area and to provide an alternative pump-out service. As part of the program, HRSD will:

- Educate the public on the reasons for proper disposal of waste from Marine Sanitation Devices
- Recognize the City on flyer displays that promote the Program
- Attend water-themed events and festivals in the City to promote the Program
- Provide boat owners another vessel friendly alternative to using marina pump out facilities including residential appointments

Appendix 1 provides the signed agreement between the City and HRSD.

Oyster Propagation Programs

Oysters provide a natural filtering mechanism that reduces bacteria as well as nutrients in the Bay water column. This has been recognized by VIMS and others which have advocated the establishment of oyster reefs as one mechanism to help restore the Bay. The City will investigate locations and available partnerships for oyster plantings at restricted harvesting sites to assess their potential for oyster reef establishment. Prospective locations and partnerships may include but are not limited to:

1. Locations
    a. Langley Air Force Base
    b. Schools
    c. Other State or Federal sites within the Back River watershed
2. Partnerships
    a. The Virginia Institute of Marine Science
    b. US Army Corps of Engineers
    c. Peninsula Master Naturalists
    d. Other Naturalists groups

The City will provide a summary of this investigation that evaluates the feasibility of establishing partnerships to move forward and with preliminary locations and areas to develop the oyster restoration project.

Geese

Geese are a significant source of wildlife fecal contributions and any reductions in the resident goose population or reduction in usage of ponds and direct riparian areas will provide a substantial reduction of bacteria levels to the Back River. The City will:

1) Conduct an assessment of suspected high goose concentration areas to identify potential high priority facilities. This assessment will
    a. Compile GIS data on high probability land uses, known problem areas such as golf courses, larger BMPs with surrounding turf, parks, and areas identified from former complaints.
    b. Perform periodic inspections of suspect areas to document noticeable waterfowl habitation, flock size and type, and use patterns.
    c. Identify High Priority Sites for implementation of potential management measures

d. Review control measures such as:
    i. Plantings and other measures that dissuade waterfowl habitation,
    ii. Dogs, sirens, silhouettes to determine their effectiveness and compatibility with land uses
    iii. Goose population relocation and reduction strategies
    iv. Summarize findings and develop potential management strategies for each of the typical high priority site types.

2) Develop a site specific goose management plan from the identified feasible strategies for each of the high priority sites for inclusion into a Stormwater Pollution Prevention Plan that will be developed for those sites. High priority sites will be expanded to include as a minimum the City's golf courses. The City's MS4 Program Plan will subsequently be amended to include these high priority areas identified in action 1 above.

Pet Waste

Pet wastes are a major contributor to bacteria loadings and recognized as a source that can be controlled through City actions. The City has installed over 30 pet waste stations as outlined in Chapter 3. It will coordinate with stakeholders to conduct the following actions:

1) Install six additional pet waste stations throughout the Back River watershed. New subdivisions will be specifically targeted during plan review and encouraged to commit to provide pet waste stations.

2) Investigate ordinance changes such as requiring Homeowner Associations (HOAs) to own and operate waste stations and to provide additional outreach to their respective neighborhoods. The City will review its pet waste ordinances (Section 5-8.1) and determine where changes may be needed.

4.3 Enhanced Public Outreach – Part I.D.2.b) 3)

The City currently implements public education and outreach programs through a regional stormwater management program Hampton Roads Planning District Commission. The HRPDC askHRGreen program has focused on bacteria issues since inception using a mix of media outlets and methods to reach pet owners in the region. Items installed throughout the City such as pet waste collection stations and other tools, such as rack cards and bumper stickers, emphasize the "bag-it, trash it" message. At the same time, the City lists information regarding TMDL pollutants of concern, including *E.coli*, on its web site and the City's Public Education and Outreach Plan. As a result all City households will be provided information promoting the elimination and reduction of *E.coli.* As part of the City's MS4 Permit Part I.D.2.b) 3), it must address the following permit special condition:

"Enhance the public education and outreach and employee training programs to also promote methods to eliminate and reduce discharges of the pollutants identified in the WLA". [Part I.D.2.b) 3)]

The following special programs will be implemented by the City to enhance their existing education and public outreach programs in addition to programs already in place to comply with Part 1.B of the City's MS4 Permit:

1. Pet Waste Stations -Target new subdivisions during plan review to provide outreach material to HOAs on pet waste or providing Hampton Animal Control brochures prior to permit closure/HOA turnover or CO issuance.
    a. Provide Hampton Animal Control brochures "All the Scoop on Poop" during licensure mailings once per permit cycle;
    b. Conduct pet waste outreach on the Hampton Roads Show, currently scheduled for February 2018;

2. Enhanced Employee Training Program -review the stormwater pollution prevention plans for the City's major facilities and include where appropriate additional information on bacteria contamination which will also be included in the employee/staff training program as part of their annual Stormwater Pollution Prevention Plan (SWPPP) training updates.

3. Expand the educational program to all divisions including identification and reporting procedures for illicit discharges. Assemble a primary contacts list for City Departments such as Schools & Community Centers.

4.4 Assessment of City Facilities – Part I.D.2.b) 4)

The MS4 permit requires the City to *"Assess all significant sources of pollutant(s) from facilities of concern owned or operated by the MS4 operator that are not covered under a separate VPDES industrial stormwater permit and identify all municipal facilities that may be a significant source of the identified pollutant."* [Part I.D.2.b) 4)]

The City facilities within the regulated areas will be assessed to:

1) Determine their potential for discharging bacteria to the City's MS4 or directly into surface waters. Sources may include those associated with the municipal facilities that potentially produce bacteria pollution as a part of their operations, or those subject to loading from outside sources, such as pets at recreational parks, schools and municipal open space. Special attention will be given to evaluating on-site septic systems and portable toilets at City facilities to determine their potential as a significant source of bacterial pollution.
2) Ensure IDDE monitoring program includes sampling of maintenance facilities, public golf courses, recycling Centers and Bluebird Gap Farm.

4.5 TMDL Action Plan Assessment and Timeline – Part I.D.2.b) 5)

The City will implement the MS4 Program components described above to reduce the potential of bacterial discharges to surface waters. It is required to *"Develop and implement a method to assess TMDL Action Plans for their effectiveness in reducing the pollutants identified in the WLAs*." [Part I.D.2.b) 5)]. The method of assessment and interim milestones include:

1. The completion of management actions will be tracked and reported in the City's MS4 annual reports. These measures will be annually assessed to determine if they should be modified at the end of the year and revisions if necessary incorporated into the permit through the annual report.

2. Progress towards meeting water quality goals will be tracked through citizen monitoring and the completion of the 305(b)/303(d) Water Quality Assessment Integrated Report submitted by VDEQ to EPA every even numbered year. That report is a summary of the water quality conditions for the five-year assessment period preceding the report, and serves as the State's list of impaired waters.

The success of the management actions proposed in this document will be determined by ambient water quality data rather than a demonstration of attaining an assigned waste load allocation. These management actions were chosen because it is believed they will have the greatest effect on improving water quality in these watersheds. As actions are implemented, water quality data are collected, and new information and technology become available, actions that are deemed ineffective will be discontinued and new actions may be added.

4.6 Actions in Future Permit Cycles – Part I.D.2.g)

The actions proposed in this plan are proposed for implementation during the first permit cycle and any actions found to be ineffective will because withdrawn. Pursuant with Part 1.D.2.g) of the City's MS4 permit, Hampton, "*shall identify the best management practices and other steps that will be implemented during the next permit term as part of the permittee's reapplication for coverage as required under Part II.M.*" [Part I.D.2.g)]. This re-application will be submitted following re-issuance of the State's General Permit.

The future reduction strategies will continue to addresses sources with the largest potential impacts on water quality such as sanitary sewer overflows, septic system failures, pet waste, stormwater runoff and recreational boating. The initial implementation actions in this permit cycle were developed to reduce human and pet sources of bacteria loadings whereas future strategies may need to also focus on wildlife as the single largest remaining contributing source.

If all these actions prove to be insufficient to meet the water quality criterion for primary contact recreation and shellfish harvesting in all or parts of the Back River, then the designation of these waters may need to be further evaluated through a special study called a "Use Attainability Analysis" to determine if the designated use should be changed in an amendment to the water quality standards regulations. A Use Attainability Analysis examines the physical, chemical, biological and economic use elements of a water body to designate or change the designation of that water body's designated use (e.g., swimming, fishing, etc.).

5.0 Public Comment Process for Draft Action Plan – Part I.D.2.b) 6)

5.1 Public Comment Process

Part I. D. 2. b) 6) of the Permit requires the City to solicit public input on the draft TMDL Action Plan and consider public comments in the development of the final plan that is submitted to the VDEQ. A public meeting to present the City's Draft Back River Bacteria TMDL Action Plan was held March 2, 2018, which initiated the public comment period. The public meeting was advertised as noted below, beginning on February 1, 2018, via the City's webpage, e-news blasts and on designated kiosks at the City Hall main entrance area.

- **Purpose of Notice**: To seek public comment on the Back River Bacteria TMDL Action Plan.

- **Public Comment Period**: March 2, 2018 to April 2, 2018.

- **Permittee Name, Address and Permit Number:** City of Hampton; Department of Public Works, 22 Lincoln Street, Hampton, Virginia 23669, VA0088633.

- **Project Description**: The City has prepared a Bacteria TMDL Action Plan for the Back River to address all items listed in the City's MS4 permit Part I.D.2. The draft Bacteria TMDL Action Plan will be available March 2, 2018 at http://hampton.gov/DocumentCenter/View/20870.

- **How to Comment:** The City accepts comments by hand-delivery, e-mail, fax or postal mail. All comments and requests must be in writing and be received by the City during the comment period. Submittals must include the names, mailing addresses and telephone numbers of the commenter/requester and all persons represented by the commenter/requester.

- **Contact for Public Comments**, Document Requests and Additional Information: Dr. Sharon Surita, City of Hampton, Public Works Department, 22 Lincoln Street, 4th Floor, Hampton VA 23369; E-mail:sharon.surita@hampton.gov; Fax: 757-727-6123. The public may review the Back River Bacteria TMDL Action Plan at the City office named above by appointment or may request copies of the documents from the contact person listed above.

5.2 Summary of Comments

The comment period began on March 2, 2018 and ended on April 2, 2108. During the comment period, 2 sets of comments were received from two (2) individual citizens. Below is a summary of the comments received, the commenter and Hampton's response to each item.

Comment 1: I imagine more people from HWRP will be interested in hearing about it (short notice and a daytime meeting made Friday's meeting hard for many of our members to make). Still, we can try to get the word out and ask them to reply during the public comment period. As we discussed, if you have a 1-page handout that summarizes the report and explains what kind of comments would be helpful /how our comments will be used, that would be great. We could distribute a hard copy at our meeting, as well as send one out via email… Knowing how our efforts contribute to the MS4 permit and cleaner waters is something that would interest our members.

Commenter: Claire Neubert – Citizen, Chair of Hampton Waterways Restoration Project (HWRP)

Hampton Response 1*: The public meeting was advertised as noted in Section 5.1, beginning on February 1, 2018, via the City's webpage, e-news blasts and on designated kiosks at the City Hall main entrance area. Social media advertisement was also used; however it was noted that this method was not used until the week of the public meeting. The City will direct future efforts to using social media in a timelier manner as this method appears to have a larger reach.*

The City has prepared a 1-page handout summarizing the purpose of the report. Thank you for the recommendation. The handout was distributed through several mediums and may be found in Appendix 3.

Comment 2: When I look at the project description online, I don't see the slide covering HWRP that you had in your PowerPoint presentation… I seem to remember it saying that we are involved with pet waste stations and rain barrel workshops. Although we certainly support those efforts, we, as a group, have not done projects on those issues. So, that could be confusing for our members to read. Also, I don't remember litter pick-ups (by land and water) as being a part of the list, and that is something that we do. I realize I could have misinterpreted the slide and/or may not be remembering it correctly, so please feel free to clarify my memory!

Commenter: Claire Neubert – Citizen, Chair of Hampton Waterways Restoration Project

Hampton Response 2*: The City acknowledges the error in providing these items in one slide of the PowerPoint presentation as this may be misleading. The report specifies that several education programs undertaken by the Hampton Clean City Commission (HCCC) are aimed at improving local water quality and are relevant to bacteria loadings. Furthermore, the City recognizes the variety of activities conducted by the HWRP including: water quality monitoring, kayak clean-ups/waterway paddles, shoreline clean-ups, educational outreach, etc.*

Comment 3: Also, insofar as water quality monitoring efforts for this year, we have, as part of our plan, the intent to do additional testing following rain events. As that is one of the goals for the TMDL plan, perhaps we could collaborate and help with that. You may also be interested in knowing that we hope to do some "demo" testing at public events in order to raise awareness of good water quality.

Commenter: Claire Neubert – Citizen, Chair of Hampton Waterways Restoration Project

Hampton Response 3*: The HCCC collaborates with Public Works on educational outreach activities including water quality sampling. The expansion of monitoring efforts will continue to be coordinated by the HCCC as well as Public Works Operations collaboratively. Public works would be interested in the outcomes of the proposed "demo" testing.*

Commenter: Claire Neubert – Citizen, Chair of Hampton Waterways Restoration Project

Hampton Response 3*: The HCCC collaborates with Public Works on educational outreach activities including water quality sampling. The expansion of monitoring efforts will continue to be coordinated by the HCCC as well as Public Works Operations collaboratively. Public works would be interested in the outcomes of the proposed "demo" testing.*

Comment 4: With regard to geese produced contaminants: In Hampton, some apartment complexes and business parks include ornamental man made ponds. I agree with the measures described for monitoring and reducing geese use at such sites. However I do not think the recommendations go far enough. I think the plan's recommendations should include changes to the city's building permit system. Specifically, the system should be revised to discourage building ornamental ponds in new construction in the Back River Watershed. Changes should include higher fees for a permit to build a pond (or establishing a "pond permit" if one does not currently exist), and include "geese discouragement measures", as described in the plan, to be implemented as part of the building permit requirement.

Commenter: Capt. Will Kotheimer (Ret USN), HCCC member

Hampton Response 4*: Ponds that are constructed today are part of a stormwater management plan associated with development; whereby the goal is to reduce stormwater flooding and contaminants due to new construction. All plans must undergo a plan review process and must meet criteria set forth by the Virginia Department of Environmental Quality. Depending on the level of design, studies have shown that wet ponds provide a range of 44% to 99% bacteria removal. However, this does not offset the contributions of bacteria due to wildlife. The City has initiated assessments of certain land uses to determine the waterfowl presence and will evaluate the feasibility of various control measures to dissuade waterfowl habitation.*

Appendix 1

HRSD Boater Education and Pump-Out Internship Program Agreement

Appendix Includes:

1. HRSD Boater Education and Pump-Out Internship Program Agreement

PREPARED BY:

City of Hampton
City Attorney's Office
22 Lincoln Street
Hampton, VA 23669 (vem)

REVIEWED BY:

Amanda Albright
Hampton Roads Sanitation District
1434 Air Rail Avenue
Virginia Beach, VA 23455

BOATER EDUCATION AND PUMP-OUT INTERNSHIP PROGRAM AGREEMENT

THIS BOATER EDUCATION AND PUMP-OUT INTERNSHIP PROGRAM AGREEMENT (this "Agreement") is made and entered into this 2nd day of August, 2017, between **HAMPTON ROADS SANITATION DISTRICT**, a political subdivision of the Commonwealth of Virginia, located at 1434 Air Rail Avenue, Virginia Beach, Virginia 23455 ("HRSD") and the **CITY OF HAMPTON, VIRGINIA,** a municipal corporation located at 22 Lincoln Street, Hampton, Virginia 23669 (the "City").

RECITALS:

WHEREAS, the Clean Vessel Act of 1992, 33 U.S.C. § 1322, was passed in order to reduce pollution from vessel sewage discharges;

WHEREAS, in 1996, the Hampton Roads Boater Pump Out Internship Program (the "Program") was launched, which currently is a supportive effort of HRSD, the City of Virginia Beach, the City of Norfolk, and Sport Fish and Wildlife Restoration Grant Program within the U.S. Fish and Wildlife Services, administered by the Virginia Department of Health ("VDH");

WHEREAS, the Program focuses on educating the boating community about proper disposal of vessel sewage in all marinas within HRSD's service area, *i.e.*, 17 cities and counties;

WHEREAS, the Program operates year round, from Memorial Day through Labor Day on Friday, Saturday, and Sunday, and on Saturdays all other seasons of the year;

WHEREAS, HRSD maintains and operates portable pump out equipment, which allows for servicing recreational watercraft at any reasonable location to include public and private docks, work racks and while on trailers;

WHEREAS, collected wastes are transferred to one of HRSD's specially outfitted work trucks for transportation to one of HRSD's sewage treatment plans for proper treatment and disinfection;

WHEREAS, HRSD interns provide a pump out service free of charge and educate the public on the reasons for proper disposal of waste from Marine Sanitation Devices ("MSDs");

WHEREAS, the Program offers boat owners another vessel friendly alternative to using marina pump out facilities;

WHEREAS, HRSD wishes to expand its reach of the Program to all marinas and boat ramps in the City and will provide specific pump out services to offer a recreational boat friendly alternative for the proper disposal of MSD waste in the Hampton River, Back Creek, and the rest of the City waters (*see* Table 2 of Attachment A hereto); and

WHEREAS, the City is agreeable to HRSD providing this service within its jurisdictional limits under certain terms and conditions.

AGREEMENT

NOW, THEREFORE, in consideration of these covenants, the parties hereto agree as follows:

1. The foregoing recitals are incorporate by reference as if fully set forth herein.

2. HRSD agrees to:

   a. Arrange one crew that will be devoted to the City each weekend, beginning July 01, 2018. Each of the 17 marinas and boat ramps in the City will be visited multiple times over the contract year to conduct face-to-face instructional conversations to the boating public for proper disposal of vessel waste from their MSDs.

   b. Provide pump out service by making available a 24-hour phone line or access to an online form on HRSD's website, including servicing call in, walk-up, and residential appointments within the City with daily checks of outlets to create a finalized schedule for each weekend;

   c. Call boaters at the end of each week to confirm their pump out appointment request;

   d. Attend water themed events and festivals in the City to promote the Program in partnership with the City; and

   e. Recognize the City on the public report and flyer displays that promote the Program.

3. The City shall:

   a. remit payment to HRSD pursuant to Paragraph No. 3 herein; and

b. cooperate with HRSD to promote the Program.

4. Consideration.

a. The Program is part of HRSD's Municipal Assistance program, and reimbursement of services will be on an at-cost basis. As such, the City's method of payment is based on a monthly itemized bill separated into two categories: Labor Cost Report and Expense Report, which will be itemized project expenses divided equally among all HRSD jurisdictional partners and the Virginia Department of Health. The City's estimate annual cost is $28,050.00. *See* Table 3 of Attachment A hereto.

b. A final report will be provided with the final invoice upon completion of all work, including monthly compilations of names of marinas visited, number of boats pumped, quantity in gallons of sewage collected, and the total number of people spoken to about the Program in the City.

5. Any notice, communication, or request under this Agreement shall be sufficiently given or delivered if dispatched by either (a) certified mail, postage prepaid, return receipt requested, (b) nationally recognized overnight delivery service (next business day service), or (c) hand-delivery (hand-delivery (if receipt is evidenced by a signature of the addressee or authorized agent), and addressed to the applicable parties as follows:

As to HRSD: Amanda Albright
Hampton Roads Sanitation District
1434 Air Rail Avenue
Virginia Beach, VA 23455

As to the City: Program Administrator of the Stormwater Division
City of Hampton
Department of Public Works
22 Lincoln Street, 4th Floor
Hampton, VA 23669

Any notice, communication, or request so sent shall be deemed to have been "given" (a) as of the next business day after being sent, if sent by nationally recognized express mail service, (b) as of the fifth business day after being sent, if sent by Registered or Certified U.S. Mail or (c) upon receipt, if sent by hand delivery. Any party may change its address for notice purposes by giving notice thereof to the other parties, except that such change of address notice shall not be deemed to have been given until actually received by the addressee thereof.

6. Neither party waives, modifies, or alters to any extent whatsoever the availability of the defense of sovereign immunity. Both parties shall be responsible only for its own employees and the acts of its employees to the extent permitted by law.

7. The waiver by either party of or the failure to take action with respect to any breach of any term, covenant or condition herein contained shall not be deemed a waiver of such term, covenant or condition herein contained.

8. This Agreement is a Virginia contract deemed executed and accepted in the Commonwealth of Virginia, and any and all questions with respect to any of the provisions herein shall be instituted, maintained, and contested in a court of competent jurisdiction in the City of Hampton, Virginia. This Agreement shall be construed and enforced in accordance with the laws of the Commonwealth of Virginia.

9. Either party may terminate this Agreement upon 30 days' written notice pursuant to Paragraph No. 4.

10. This Agreement contains the final and entire agreement between the parties hereto and contains all the terms and conditions agreed upon, it being the intent of the parties that neither shall be bound by any terms, conditions, or other representations not herein written.

[SIGNATURES APPEAR ON THE FOLLOWING PAGES]

WITNESS the following signatures:

HAMPTON ROADS SANITATION DISTRICT

By: _____
Edward G. Henifin
General Manager

COMMONWEALTH OF VIRGINIA
City of Virginia Beach, to-wit:

I hereby certify on this 21st day of July, 2017 that the foregoing Boater Education and Pump-Out Internship Program Agreement was acknowledged before me by Edward G. Henifin, General Manager, on behalf of Hampton Roads Sanitation District. He is known to me personally.

_____
Notary Public

My commission expires: _____
Registration No. _____

JENNIFER LYNN CASCIO
NOTARY PUBLIC - Reg. #361710
COMMONWEALTH OF VIRGINIA
MY COMMISSION EXPIRES AUGUST 31, 2018

CITY OF HAMPTON, VIRGINIA

By: _____
City Manager or Authorized Designee

COMMONWEALTH OF VIRGINIA
City of Hampton, to-wit:

I hereby certify on this 6th day of September, 2017 that the foregoing Boater Education and Pump-Out Internship Program Agreement was acknowledged before me by Mary B. Bunting, the City Manager ~~or authorized designee~~ on-behalf of the City of Hampton. ~~She/He~~ is known to me personally.

_____
Notary Public

My commission expires: July 31, 2019
Registration No. 7123061

DONNA L. HODGES
NOTARY PUBLIC
REGISTRATION # 7123061
COMMONWEALTH OF VIRGINIA
MY COMMISSION EXPIRES
JULY 31, 2019

Approved as to Content:

_____ 8/23/2017
Department of Public Works

Approved as to Form and Legal Sufficiency:

_____
Deputy City Attorney

HRSD
Cleaning wastewater every day for a better Bay.

4/18/2017
Sharon Surita
Office of Administration and Engineering Services
22 Lincoln St, 4th Floor
Hampton, VA 23669

RE: Boater Education and Pump Out Internship Program

The Clean Vessel Act (1992) was passed in order to reduce pollution from vessel sewage discharges. In 1996 the Hampton Roads Boater Pump Out Internship Program was launched. This program is currently a supportive effort of The Hampton Roads Sanitation District (HRSD), the City of Virginia Beach, the City of Norfolk and the Sport Fish and Wildlife Restoration Grant Program, within the U.S Fish and Wildlife Services; administered by The Virginia Department of Health (VDH).

The program operates year round; Memorial Day – Labor Day on Friday, Saturday, and Sunday, and on Saturdays all other seasons of the year. Interns provide a pump out service free of charge, and educate the public on the reasons for proper disposal of waste from Marine Sanitation Devices (MSDs). Raw or poorly treated sewage can spread disease; contaminate shellfish beds, and lower oxygen levels in water which cause stress to fish and other aquatic life. Providing pump outs is an essential part of the effort, offering to boat owners another vessel friendly alternative to using marina pump out facilities. HRSD maintains and operates portable pump out equipment, which allows for servicing recreational watercraft at any reasonable location to include public and private docks, work racks and while on trailers. The collected wastes are transferred to one of HRSD's specially outfitted work trucks for transportation to one of HRSD's sewage treatment plants for proper treatment and disinfection.

Boat owners may request a pump out by calling the 24-hour phone line (757-460-4253), or use the online form found on the HRSD website. These outlets are checked daily to create a finalized schedule for each weekend. Boaters are called at the end of each week to confirm their pump out appointment request.

The program currently services some boaters located at marinas in Hampton (Table 1), although coverage of Hampton is not guaranteed. HRSD would like to expand its reach of the program in Hampton to all marinas and boat ramps (Table 2) and will provide specific pump out services to offer a recreational boat friendly alternative for the proper disposal of MSD waste in the Hampton River, Back Creek and the rest of the City waters.

By cost participating in this program, HRSD will guarantee that one crew will be devoted to the City of Hampton each weekend. Each of the 17 marinas and boat ramps in Hampton will be visited multiple times over the contract year to conduct face-to-face instructional conversations to boat owners for proper disposal of vessel waste from their MSDs. The program will also guarantee servicing call-in, walk-up and residential appointments within the City of Hampton. The Program will also attend water themed events and festivals in Hampton to promote the program and its partnership with Hampton. Hampton will also be recognized on the public annual report and flyer displays that promote the Program.

This program is part of HRSD's Municipal Assistance program and reimbursement of services will be on an at cost basis. Method of payment by the City of Hampton is based upon a monthly itemized bill broken into two categories; Labor Cost Report and Expense Report. Labor and expense Reports will include an itemization of

project expenses and will be divided equally among all partners. The estimated contract year cost for Hampton's participation is $28,050. See Table 3 for total project cost and partner cost breakdown.

A final report will be provided with the final invoice upon completion of all work. The information to be included, broken down by month; Names of marinas visited, number of boats pumped, quantity in gallons of sewage collected, and total number of people spoken to about the program in Hampton.

Table 1 Marinas in Hampton the Boater Education Program has visited in 2015 and 2016

HAMPTON 2015	Gallons 3447	Pump Outs 34	Contact 501
Bluewater	340	11	36
Customs House	55	3	4
Hampton Yacht Club	205	9	27
Joys Marina	2	1	3
Salt Ponds Marina	1800	72	283
Southall Landings	1045	38	148
HAMPTON 2016	**Gallons 6231**	**Pump Outs 337**	**Contacts 672**
Belle Isle	0	0	3
Bluewater	355	8	25
Customs House	85	5	10
Hampton Yacht Club	169	8	28
Joys Marina	0	0	0
Salt Ponds Marina	4282	220	426
Southall Landings	1065	70	152
Sunset Marina	40	3	8
Old Point Comfort	235	23	20

Table 2

Marinas and Boat Ramps in Hampton		
Belle Isle Marina	Gosnolds Hope Park Public Boat Ramp	Old Point Comfort Marina Ft Monroe
Bluewater Yacht Center	Hampton Yacht Club	Salt Ponds Marina Resort
Buckroe Fishing Pier	Joy's Marina	Southall Landings Marina
Customs House Marina	M S Y B Inc Marina	Sunset Boating Center
Dandy Haven Marina	Marina Cove Boat Basin	Sunset Creek Public Boat Ramp
Fox Hill Public Boat Ramp	Mill Point Park Public Boat Ramp	

Table 3 Contract July 1, 2018 – June 31st, 2019

	TOTAL PROGRAM COST	Hampton	VB	Norfolk	VDH
LABOR	$104,000.00	$20,800.00	$20,800.00	$20,800.00	$41,600.00
EXPENSES	$29,000.00	$7,250.00	$7,250.00	$7,250.00	$7,250.00
TOTAL COST	$133,000.00	$28,050.00	$28,050.00	$28,050.00	$48,850.00

* costs are estimated, total cost is a maximum not to exceed figure

Please contact me at 757-460-7024 or aalbright@hrsd.com if you have any questions.

Thank you,

Amanda Albright

Appendix 2

Certification Statement

Appendix Includes:

1. Certification Statement - 9VAC25-870-370. Signatories to State Permit Applications and Reports

Certification Statement

9VAC25-870-370. SIGNATORIES TO STATE PERMIT APPLICATIONS AND REPORTS

A. All state permit applications shall be signed as follows:

1. For a corporation: by a responsible corporate officer. For the purpose of this section, a responsible corporate officer means: (i) a president, secretary, treasurer, or vice-president of the corporation in charge of a principal business function, or any other person who performs similar policy-making or decision-making functions for the corporation, or (ii) the manager of one or more manufacturing, production, or operating facilities, provided the manager is authorized to make management decisions that govern the operation of the regulated facility, including having the explicit or implicit duty of making major capital investment recommendations, and initiating and directing other comprehensive measures to assure long-term environmental compliance with environmental laws and regulations; the manager can ensure that the necessary systems are established or actions taken to gather complete and accurate information for state permit application requirements; and where authority to sign documents has been assigned or delegated to the manager in accordance with corporate procedures;

2. For a partnership or sole proprietorship: by a general partner or the proprietor, respectively; or

3. For a municipality, state, federal, or other public agency: by either a principal executive officer or ranking elected official. For purposes of this section, a principal executive officer of a federal agency includes (i) the chief executive officer of the agency, or (ii) a senior executive officer having responsibility for the overall operations of a principal geographic unit of the agency.

B. All reports required by state permits, and other information requested by the board shall be signed by a person described in subsection A of this section, or by a duly authorized representative of that person. A person is a duly authorized representative only if:

1. The authorization is made in writing by a person described in subsection A of this section;

2. The authorization specifies either an individual or a position having responsibility for the overall operation of the regulated facility or activity such as the position of plant manager, operator of a well or a well field, superintendent, position of equivalent responsibility, or an individual or position having overall responsibility for environmental matters for the company. A duly authorized representative may thus be either a named individual or any individual occupying a named position; and

3. The written authorization is submitted to the department.

CERTIFICATION	
"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."	
Mary B Bunting	4/12/18
Responsible Official Signature	**Date**
VA0088633	City of Hampton Municipal Separate Storm Sewer System
Permit Number	**Facility Name**

CITY OF HAMPTON
OFFICE OF THE CITY ATTORNEY
Approved as to form and legal sufficiency
Date: 04·06·2018
DEPUTY City Attorney

Appendix 3

TMDL Action Plan Fact Sheet

Appendix Includes:

1. Back River Bacteria TMDL Action Plan Fact Sheet

Back River Bacteria TMDL Action Plan

Q. Why is there a Bacteria TMDL Action Plan?

A. Bacteria in our waterways can affect our health, water supply, recreational activities, wildlife, seafood, and quality of life in Hampton. Beach closures and restrictions on shellfish consumption result when high bacteria counts occur in our waters. The City of Hampton is looking for ways to reduce the Total Maximum Daily Load (TMDL) of bacteria entering the Back River along with other pollutants such as nitrogen, phosphorous, chemicals, soaps, and sediment. Sediment includes soil erosion and/or debris from roads or construction sites.

Q. Where are the bacteria in the Back River coming from?

A. Bacteria come from various sources of feces. The highest amount of bacteria comes from wildlife and fowl (62%). The second highest is pet waste (23%) followed by livestock (9%) and humans (6%). The human contribution is further broken down into septic systems, sanitary sewer overflows and marinas (slips).

Q. How does wildlife and pet waste get into the Back River?

A. The rain runoff from land and hard surfaces (streets, driveways, parking lots) washes some of the bacteria and nitrogen from the feces and transports it to street curb inlets, ditches, and creeks going into the Back River. When it rains, the land area that eventually drains by gravity into a waterway is called a watershed. This TMDL Action Plan covers the Back River Watershed.

Q. How can the City of Hampton address this problem?

A. Vegetative buffers are being added to discourage fowl/wildlife around Retention Ponds called BMPs (Best Management Practice). Wildlife feeding is discouraged. Pet Waste Stations are located in city parks. To encourage neighbors to pick up pet waste, free pet waste stations are available to homeowner associations through the **Askhrgreen.org** Pet Waste Station Grant program. City ordinance requires citizens to "*remove immediately the dog's excrement from any public or private property. . .*" § 5-8.1. Citizens can continue to report illicit discharges to Hampton's 311 call center at (757) 727-8311 or http://www.hampton.gov/234/3-1-1-Citizen-Contact-Center.

Q. Where can I find more information on Hampton's Back River Bacteria TMDL Action Plan?

A. The Draft Back River Bacteria TMDL Action Plan can be found at the link provided below.

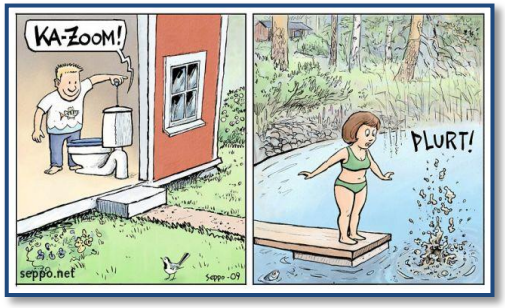
http://hampton.gov/DocumentCenter/View/20870

Sources of Bacteria Pollution in Numerical Order

#1 - Wildlife

#2 - Pet Waste

#3 - Livestock



4 - Human: septic tanks, sewage overflows, and marina slips.

How to Comment: The City accepts comments via online form, hand-delivery, e-mail, fax or postal mail. **Refer to reverse side of page for additional details**

Comment Period:
March 2, 2018 – April 2, 2018